

Application No. 10/568,054
Response dated May 13, 2009
Response to Notice of Non-Compliant Amendment dated May 7, 2009

In the Claims

Listing/Amendments to the claims including status indicators:

1. (Withdrawn) A method of whitening teeth in a subject, comprising: applying a first tooth whitening composition to the teeth of the subject for a predetermined period of time; and applying a second tooth whitening composition to the teeth of the subject in predetermined intervals; wherein at least one of the first and second tooth whitening compositions is dispensed from a dental delivery device.
2. (Withdrawn) The method of claim 1, wherein the first tooth whitening composition comprises a first oxidizing agent.
3. (Withdrawn) The method of claim 2, wherein the first oxidizing agent is selected from the group consisting of hydrogen peroxide, carbamide peroxide, alkali metal peroxides, chlorine dioxide, sodium chlorite, alkali metal percarbonates, and alkali metal perborates.
4. (Withdrawn) The method of claim 2, wherein the first oxidizing agent comprises hydrogen peroxide in an amount from about 10.0% to about 36.0% weight to weight of the first tooth whitening composition.
5. (Withdrawn) The method of claim 2, wherein the first oxidizing agent comprises hydrogen peroxide in an amount of about 15.0% weight to weight of the first tooth whitening composition.
6. (Withdrawn) The method of claim 1, wherein the first tooth whitening composition further comprises a first stabilizer.
7. (Withdrawn) The method of claim 6, wherein the first stabilizer is selected from the group consisting of 1-hydroxyethylidene-1,1-diphosphonic acid, sodium stannate trihydrate, sodium

acid pyrophosphate, ethylenediamine tetraacetic acid (EDTA), diethylenetriamine pentaacetic acid (DETPA), nitrilotriacetic acid (NTA), ethylenediamine tetra(methylenephosphonic acid), diethylenetriamine penta(methylenephosphonic acid), sorbitol, xylitol, mannitol, maltitol, lactitol, alkali metal pyrophosphates and alkali metal polyphosphates.

8. (Withdrawn) The method of claim 1, wherein the predetermined period of time ranges from about five minutes to about one hour.

9. (Withdrawn) The method of claim 1, wherein the second tooth whitening composition comprises a second oxidizing agent.

10. (Withdrawn) The method of claim 9, wherein the second oxidizing agent is selected from the group consisting of hydrogen peroxide, carbamide peroxide, alkali metal peroxides, chlorine dioxide, sodium chlorite, alkali metal percarbonates, and alkali metal perborates.

11. (Withdrawn) The method of claim 9, wherein the second oxidizing agent comprises hydrogen peroxide in an amount from about 1.0% to about 10.0% weight to weight of the second tooth whitening composition.

12. (Withdrawn) The method of claim 9, wherein the second oxidizing agent comprises hydrogen peroxide in an amount of about 5.0% weight to weight of the second tooth whitening composition.

13. (Withdrawn) The method of claim 1, wherein the second tooth whitening composition further comprises a second stabilizer.

14. (Withdrawn) The method of claim 13, wherein the second stabilizer is selected from the group consisting of 1-hydroxyethylidene-1,1-diphosphonic acid, sodium stannate trihydrate,

sodium acid pyrophosphate, ethylenediamine tetraacetic acid (EDTA), diethylenetriamine pentaacetic acid (DETPA), nitrilotriacetic acid (NTA), ethylenediamine tetra(methylenephosphonic acid), diethylenetriamine penta(methylenephosphonic acid), sorbitol, xylitol, mannitol, maltitol, lactitol, alkali metal pyrophosphates and alkali metal polyphosphates.

15. (Withdrawn) The method of claim 1, wherein the predetermined interval ranges from about one to about six times per day.

16. (Withdrawn) A method of whitening teeth in a subject, comprising: applying a first tooth whitening composition to the teeth of the subject for a predetermined period of time; and providing a second tooth whitening composition to the subject and instructing the subject to apply the second tooth whitening composition in predetermined intervals of time; wherein at least one of the first and second tooth whitening compositions is dispensed from a dental delivery device.

17. (Withdrawn) The method of claim 16, wherein the first tooth whitening composition comprises a first oxidizing agent.

18. (Withdrawn) The method of claim 17, wherein the first oxidizing agent is selected from the group consisting of hydrogen peroxide, carbamide peroxide, alkali metal peroxides, chlorine dioxide, sodium chlorite, alkali metal percarbonates, and alkali metal perborates.

19. (Withdrawn) The method of claim 17, wherein the first oxidizing agent comprises hydrogen peroxide in an amount from about 10.0% to about 36.0% weight to weight of the first tooth whitening composition.

20. (Withdrawn) The method of claim 17, wherein the first oxidizing agent comprises hydrogen peroxide in an amount of about 15.0% weight to weight of the first tooth whitening composition.

21. (Withdrawn) The method of claim 16, wherein the first tooth whitening composition further comprises a first stabilizer.

22. (Withdrawn) The method of claim 21, wherein the first stabilizer is selected from the group consisting of 1-hydroxyethylidene-1,1-diphosphonic acid, sodium stannate trihydrate, potassium stannate trihydrate, sodium acid pyrophosphate, ethylenediamine tetraacetic acid (EDTA), diethylenetriamine pentaacetic acid (DETDA), nitrilotriacetic acid (NTA), ethylenediamine tetra(methylenephosphonic acid), diethylenetriamine penta(methylenephosphonic acid), sorbitol, xylitol, mannitol, maltitol, lactitol, alkali metal pyrophosphates and alkali metal polyphosphates.

23. (Withdrawn) The method of claim 16, wherein the predetermined period of time ranges from about five minutes to about one hour.

24. (Withdrawn) The method of claim 16, wherein the second tooth whitening composition comprises a second oxidizing agent.

25. (Withdrawn) The method of claim 24, wherein the second oxidizing agent is selected from the group consisting of hydrogen peroxide, carbamide peroxide, alkali metal peroxides, chlorine dioxide, sodium chlorite, alkali metal percarbonates, and alkali metal perborates.

26. (Withdrawn) The method of claim 24, wherein the second oxidizing agent comprises hydrogen peroxide in an amount from about 1.0% to about 10.0% weight to weight of the second tooth whitening composition.

27. (Withdrawn) The method of claim 24, wherein the second oxidizing agent comprises hydrogen peroxide in an amount of about 5.0% weight to weight of the second tooth whitening composition.

28. (Withdrawn) The method of claim 16, wherein the second tooth whitening composition further comprises a second stabilizer.

29. (Withdrawn) The method of claim 28, wherein the second stabilizer is selected from the group consisting of 1-hydroxyethylidene-1,1-diphosphonic acid, sodium stannate trihydrate, potassium stannate trihydrate, sodium acid pyrophosphate, ethylenediamine tetraacetic acid (EDTA), diethylenetriamine pentaacetic acid (DETPA), nitrilotriacetic acid (NTA), ethylenediamine tetra(methylenephosphonic acid), diethylenetriamine penta(methylenephosphonic acid), sorbitol, xylitol, mannitol, maltitol, lactitol, alkali metal pyrophosphates and alkali metal polyphosphates.

30. (Withdrawn) The method of claim 16, wherein the predetermined interval ranges from about one to about six times per day.

31. (Withdrawn) A kit for whitening teeth in a subject, comprising:a first tooth whitening composition comprising from about 10.0% to about 36.0% hydrogen peroxide weight to weight of the first tooth whitening composition;a second tooth whitening composition comprising from about 1.0% to about 10.0% hydrogen peroxide weight to weight of the second tooth whitening composition;a dental delivery device configured to dispense the second tooth whitening composition; and a set of instructions.

32. (Withdrawn) The kit of claim 31, wherein the hydrogen peroxide is present in an amount of about 15.0% weight to weight of the first tooth whitening composition.

33. (Withdrawn) The kit of claim 31, wherein the first tooth whitening composition further comprises a first stabilizer.

34. (Withdrawn) The kit of claim 33, wherein the first stabilizer is selected from the group consisting of 1-hydroxyethylidene-1,1-diphosphonic acid, sodium stannate trihydrate, potassium stannate trihydrate, sodium acid pyrophosphate, ethylenediamine tetraacetic acid (EDTA), diethylenetriamine pentaacetic acid (DETPA), nitrilotriacetic acid (NTA), ethylenediamine tetra(methylenephosphonic acid), diethylenetriamine penta(methylenephosphonic acid), sorbitol, xylitol, mannitol, maltitol, lactitol, alkali metal pyrophosphates and alkali metal polyphosphates.

35. (Withdrawn) The kit of claim 31, wherein the first tooth whitening composition further comprises a thickener.

36. (Withdrawn) The kit of claim 35, wherein the thickener is selected from the group consisting of carboxypolymethylene, polyacrylic acid polymers and copolymers, hydroxypropylcellulose, cellulose ethers, salts of poly(methyl vinyl ether-co-maleic anhydride), polyvinyl pyrrolidone, poly(vinylpyrrolidone-co-vinyl acetate), silicon dioxide, fumed silica, and stearic acid esters.

37. (Withdrawn) The kit of claim 31, wherein the first tooth whitening composition further comprises a first alkaline pH adjusting agent.

38. (Withdrawn) The kit of claim 37, wherein the first alkaline pH adjusting agent is selected from the group consisting of sodium hydroxide, potassium hydroxide, ammonium hydroxide, sodium carbonate, potassium carbonate, sodium phosphate di- and tri-basic, potassium phosphate di- and tri-basic, sodium tripolyphosphate, tris(hydroxymethyl)aminomethane, triethanolamine, and polyethylenimine.

39. (Withdrawn) The kit of claim 31, wherein the first tooth whitening composition further comprises a first secondary therapeutic agent selected from the group consisting of antimicrobial agents, anti-inflammatory agents, tooth desensitizers, anticaries agents, tartar control agents, tooth and gum surface protectants, tooth stain prevention agents and agents effective against

dental plaque, halitosis, gingivitis, periodontal disease, oral ulcers and other diseases, afflictions or symptoms of the oral cavity.

40. (Withdrawn) The kit of claim 31, wherein the hydrogen peroxide is present in an amount of about 5.0% weight to weight of the second tooth whitening composition.

41. (Withdrawn) The kit of claim 31, wherein the second tooth whitening composition further comprises a second stabilizer.

42. (Withdrawn) The kit of claim 41, wherein the second stabilizer is selected from the group consisting of 1-hydroxyethylidene-1,1-diphosphonic acid, sodium stannate trihydrate, sodium acid pyrophosphate, ethylenediamine tetraacetic acid EDTA), diethylenetriamine pentaacetic acid (DETPA), nitrilotriacetic acid (NTA), ethylenediamine tetra(methylenephosphonic acid), diethylenetriamine penta(methylenephosphonic acid), sorbitol, xylitol, mannitol, maltitol, lactitol, alkali metal pyrophosphates and alkali metal polyphosphates.

43. (Withdrawn) The kit of claim 31, wherein the second tooth whitening composition further comprises a second alkaline pH adjusting agent.

44. (Withdrawn) The kit of claim 43, wherein the second alkaline pH adjusting agent is selected from the group consisting of sodium hydroxide, potassium hydroxide, ammonium hydroxide, sodium carbonate, potassium carbonate, sodium phosphate di- and tri-basic, potassium phosphate di- and tri-basic, sodium tripolyphosphate, tris(hydroxymethyl)aminomethane, triethanolamine, and polyethylenimine.

45. (Withdrawn) The kit of claim 31, wherein the second tooth whitening composition further comprises a second secondary therapeutic agent selected from the group consisting of antimicrobial agents, anti-inflammatory agents, tooth desensitizers, anticaries agents, tartar

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control agents, tooth and gum surface protectants, tooth stain prevention agents and agents effective against dental plaque, halitosis, gingivitis, periodontal disease, oral ulcers and other diseases, afflictions or symptoms of the oral cavity.

46. (Withdrawn) The kit of claim 31, wherein the second tooth whitening composition further comprises a moisture responsive gel carrier.

47. (Withdrawn) The kit of claim 46, wherein the moisture responsive gel carrier comprises from about 80.0% (w/w) to about 99.99% (w/w) of the second tooth whitening composition.

48. (Withdrawn) The kit of claim 46, wherein the moisture responsive gel carrier comprises a moisture sensitive polymer complex, water, and a water soluble salt.

49. (Withdrawn) The kit of claim 48, wherein the moisture sensitive polymer complex comprises carboxypolyethylene and polyvinylpyrrolidone.

50. (Withdrawn) The kit of claim 48, wherein the water soluble salt is selected from the group consisting of sodium saccharin, sodium chloride, potassium chloride, and ammonium chloride.

51. (Withdrawn) The kit of claim 48, wherein the moisture sensitive polymer complex is present in an amount of about 0.01% (w/w) to about 50.0% (w/w) of the composition.

52. (Withdrawn) The kit of claim 48, wherein the moisture sensitive polymer complex is present in an amount of about 0.01% (w/w) to about 10.0% (w/w) of the composition.

53. (Withdrawn) The kit of claim 31, wherein the dental delivery device comprises:an applicator for applying the first tooth whitening composition to the tooth surface;an actuator; anda reservoir located between the applicator and the actuator and configured to store the first tooth whitening

composition, wherein the actuator is configured to dispense the first tooth whitening composition from the reservoir to the applicator.

54. (Withdrawn) The kit of claim 31, wherein the dental delivery device comprises: an applicator for applying the second tooth whitening composition to the tooth surface; an actuator; and a reservoir located between the applicator and the actuator and configured to store the second tooth whitening composition, wherein the actuator is configured to dispense the second tooth whitening composition from the reservoir to the applicator.

55. (Withdrawn) The kit of claim 53 or 54, wherein the applicator is selected from the group consisting of a brush, a felt tip, a roller ball, and a non-woven pad.

56. (Withdrawn) The kit of claim 53 or 54, wherein the actuator is selected from the group consisting of a click mechanism, a twist and ratchet mechanism, and a push button.

57. (Withdrawn) The kit of claim 53 or 54, wherein the applicator comprises a brush and the actuator comprises a push button, wherein the push button dispenses the composition to the brush applicator.

58. (Withdrawn) The kit of claim 53 or 54, wherein the applicator comprises a brush and the actuator comprises a twist mechanism, wherein the twist mechanism dispenses the composition to the brush applicator.

59. (Withdrawn) The kit of claim 53 or 54, wherein the applicator comprises a felt tip and the actuator comprises a push button, wherein the push button dispenses the composition to the felt tip applicator.

60. (Withdrawn) The kit of claim 53 or 54, wherein the applicator comprises a felt tip and the

actuator comprises a twist mechanism, wherein the twist mechanism dispenses the composition to the felt tip applicator.

61. (Withdrawn) A two component tooth whitening system, comprising:a first tooth whitening composition comprisingfrom about 10.0% to about 36.0% hydrogen peroxide weight to weight of the first tooth whitening composition; andfrom about 64.0% to about 90.0% carrier weight to weight of the first tooth whitening composition; anda second tooth whitening composition comprisingfrom about 1.0% to about 10.0% hydrogen peroxide weight to weight of the second tooth whitening composition; andfrom about 90.0% to about 99.0% moisture responsive gel carrier weight to weight of the second tooth whitening composition.

62. (Currently Amended) A liquid oral therapeutic dental composition, ~~that increases in viscosity upon contact with moisture following application to an oral cavity surface,~~ comprising: a moisture responsive gel carrier comprising a moisture sensitive polymer complex and a water soluble salt; and a therapeutic agent dispersed in the responsive gel carrier; wherein said dental composition increases in viscosity upon contact with moisture following application to an oral cavity surface.

63. (Original) The composition of claim 62, wherein the moisture responsive gel carrier further comprises a thermally responsive polymer.

64. (Original) The composition of claim 62, wherein the moisture responsive gel carrier further comprises a pH or ion responsive polymer.

65. (Original) The composition of claim 62, wherein the therapeutic agent is selected from the group consisting of antimicrobial agents, tooth whiteners, anti-inflammatory agents, tooth desensitizers, anticaries agents, tartar control agents, tooth and gum surface protectants, tooth stain prevention agents and agents effective against dental plaque, halitosis, gingivitis,

periodontal disease, oral ulcers and other diseases, afflictions or symptoms of the oral cavity.

66. (Original) The composition of claim 62, wherein the therapeutic agent comprises a tooth whitener.

67. (Original) The composition of claim 66, wherein the tooth whitener is selected from the group consisting of an alkali metal percarbonate, carbamide peroxide, sodium perborate, potassium persulfate, calcium peroxide, zinc peroxide, chlorine dioxide, sodium chlorite, a hydrogen peroxide complex, hydrogen peroxide and mixtures of any of the foregoing.

68. (Original) The composition of claim 66, wherein the tooth whitener comprises about 0.01% (w/w) to about 20.0% (w/w) of hydrogen peroxide.

69. (Original) The composition of claim 66, wherein the tooth whitener comprises about 2.0% (w/w) to about 30.0% (w/w) of carbamide peroxide.

70. (Original) The composition of claim 62, further comprising water present in an amount of about 10.0% (w/w) to about 98.7% (w/w) of the composition.

71. (Original) The composition of claim 62, wherein the moisture responsive gel carrier comprises from about 80.0% (w/w) to about 99.99% (w/w) of the composition.

72. (Original) The composition of claim 62, wherein the moisture sensitive polymer complex comprises carboxypolymethylene and polyvinylpyrrolidone.

73. (Original) The composition of claim 62, wherein the water soluble salt is selected from the group consisting of sodium saccharin, sodium chloride, potassium chloride, and ammonium chloride.

74. (Original) The composition of claim 63, wherein the temperature sensitive polymer comprises methylcellulose.

75. (Original) The composition of claim 63, wherein the temperature sensitive polymer comprises hydroxypropyl methylcellulose.

76. (Original) The composition of claim 63, wherein the temperature sensitive polymer comprises a poly(oxyethylene)-poly(oxypropylene) block copolymer.

77. (Original) The composition of claim 62, wherein the moisture sensitive polymer complex is present in an amount of about 0.01% (w/w) to about 50.0% (w/w) of the composition.

78. (Original) The composition of claim 62, wherein the moisture sensitive polymer is present in an amount of about 0.01% (w/w) to about 10.0% (w/w) of the composition.

79. (Withdrawn) A therapeutic dental delivery device for treating a condition in an oral cavity of a subject, comprising:a liquid oral therapeutic dental composition;an applicator for applying the composition to the oral cavity;an actuator; and a reservoir located between the applicator and the actuator and configured to store the composition,wherein the actuator is configured to dispense the composition from the reservoir to the applicator.

80. (Withdrawn) The device of claim 79, wherein the therapeutic dental composition comprises a moisture responsive gel carrier and a therapeutic agent dispersed in the moisture responsive gel carrier.

81. (Withdrawn) The device of claim 80, wherein the moisture responsive gel carrier comprises a moisture sensitive polymer complex and a water soluble salt.

82. (Withdrawn) The device of claim 79, wherein the applicator is selected from the group consisting of a brush, a felt tip, a roller ball, and a non-woven pad.

83. (Withdrawn) The device of claim 79, wherein the actuator is selected from the group consisting of a click mechanism, a twist and ratchet mechanism, and a push button.

84. (Withdrawn) The device of claim 79, wherein the applicator comprises a brush and the actuator comprises a push button, wherein the push button dispenses the composition to the brush applicator.

85. (Withdrawn) The device of claim 79, wherein the applicator comprises a brush and the actuator comprises a twist mechanism, wherein the twist mechanism dispenses the composition to the brush applicator.

86. (Withdrawn) The device of claim 79, wherein the applicator comprises a felt tip and the actuator comprises a push button, wherein the push button dispenses the composition to the felt tip applicator.

87. (Withdrawn) The device of claim 79, wherein the applicator comprises a felt tip and the actuator comprises a twist mechanism, wherein the twist mechanism dispenses the composition to the felt tip applicator.

88. (Withdrawn) The device of claim 81, wherein the moisture sensitive polymer complex comprises carboxypolymethylene and polyvinylpyrrolidone.

89. (Withdrawn) The device of claim 80, wherein the therapeutic agent comprises a peroxide.

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90. (Withdrawn) The device of claim 80, wherein the therapeutic agent comprises hydrogen peroxide.

91. (Withdrawn) The device of claim 80, wherein the therapeutic agent comprises carbamide peroxide.

92. (Withdrawn) The device of claim 79, wherein the composition is present in an amount of from about 0.01 ml to 1.0 ml.

93. (Withdrawn) A therapeutic dental pen for treating a condition in an oral cavity of a subject, comprising:a liquid oral therapeutic dental composition comprising a moisture responsive gel carrier and a therapeutic agent dispersed in the responsive gel carrier, wherein the gel carrier comprises a polymer complex including carboxypolymethylene and polyvinylpyrrolidone and a water soluble salt;a brush-on applicator for applying the composition to the oral cavity;a push button; and a reservoir located between the applicator and the push button and configured to store the composition,wherein the push button is configured to dispense the composition from the reservoir to the applicator.

94. (Withdrawn) The pen of claim 93, wherein the therapeutic agent comprises a peroxide.

95. (Withdrawn) The pen of claim 93, wherein the therapeutic agent comprises hydrogen peroxide.

96. (Withdrawn) The pen of claim 93, wherein the therapeutic agent comprises carbamide peroxide.

97. (Withdrawn) A dental therapeutic kit comprising:a liquid oral therapeutic dental composition comprising a moisture responsive gel carrier and a therapeutic agent;a delivery device

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comprising:an applicator for applying the composition to the oral cavity;an actuator; anda reservoir located between the applicator and the actuator and configured to store the composition, wherein the actuator is configured to dispense the composition from the reservoir to the applicator; anda set of instructions.

98. (Withdrawn) A method for whitening teeth of a subject in need thereof, comprising:providing a therapeutic dental composition comprising a moisture responsive gel carrier and a therapeutic agent dispersed in the responsive gel carrier, wherein the gel carrier comprises a polymer complex including carboxypolymethylene and polyvinylpyrrolidone and a water soluble salt; andapplying the composition to a tooth of the subject.

99. (Withdrawn) A method of whitening teeth in a subject, comprising:applying a tooth whitening composition to the teeth of the subject with a device comprising:an applicator for applying the tooth whitening composition to the oral cavity;an actuator; anda reservoir located between the applicator and the actuator and configured to store the composition,wherein the actuator is configured to dispense the composition from the reservoir to the applicator through a transport channel.

100. (Withdrawn) The method of claim 99, wherein the device comprises plastic.

101. (Withdrawn) The method of claim 99, wherein the components of the device that are in contact with the tooth whitening composition comprise a plastic coating.

102. (New)) A liquid oral therapeutic dental composition for treating a condition in an oral cavity of a subject, comprising:

 a moisture responsive gel carrier comprising a moisture responsive polymer complex;
and

 at least one therapeutic dental agent;

wherein said dental composition has a viscosity that increases in a more humid environment.

103. (New) The dental composition of claim 102 wherein said moisture responsive gel carrier further comprises a metal salt.

104. (New) The dental composition of claim 102 wherein said moisture responsive polymer complex comprises carboxypolymethylene and polyvinylpyrrolidone.

105. (New) The dental composition of claim 102 wherein the moisture responsive polymer complex is present in an amount of about 0.01% to about 10.0% by weight of the composition.

106. (New) The dental composition of claim 102 wherein the at least one therapeutic agent comprises antimicrobial agents, tooth whiteners, anti-inflammatory agents, tooth desensitizers, anticaries agents, tartar control agents, tooth and gum surface protectants, tooth stain prevention agents, agents effective against dental plaque, halitosis, gingivitis, periodontal disease, oral ulcers or combinations thereof.

107. (New) The dental composition of claim 106 wherein said whiteners comprises an alkali metal percarbonate, carbomide peroxide, sodium perborate, potassium persulfate, calcium peroxide, zinc peroxide, chlorine dioxide, sodium chlorite, a hydrogen peroxide complex, hydrogen peroxide or mixtures thereof.

108. (New) The dental composition of claim 102 wherein the moisture responsive polymer complex comprises carboxypolymethylene and polyvinylpyrrolidone and a water soluble salt.

109. (New) The dental composition of claim 102 wherein said dental composition further comprises a stabilizer comprising 1-hydroxyethylidene-1,1-diphosphonic acid, sodium stannate trihydrate, potassium stannate trihydrate, sodium acid pyrophosphate, ethylenediamine

tetraacetic acid (EDTA), diethylenetriamine pentaacetic acid (DETPA), nitrilotriacetic acid (NTA), ethylenediamine tetra(methylenephosphonic acid), diethylenetriamine penta(methylenephosphonic acid), sorbitol, xylitol, mannitol, maltitol, lactitol, alkali metal pyrophosphates, alkali metal polyphosphates or mixtures thereof.

110. (New) The dental composition of claim 102 further dental composition further comprises an alkaline pH adjusting agent comprising sodium hydroxide, potassium hydroxide, ammonium hydroxide, sodium carbonate, potassium carbonate, sodium phosphate di- and tri-basic, potassium phosphate di- and tri-basic, sodium tripolyphosphate, tris(hydroxymethyl)aminomethane, triethanolamine, polyethylenimine or mixtures thereof.

111. (New) A liquid oral therapeutic dental composition comprising:
a moisture responsive gel carrier comprising at least one functional polymer complex;
and
a therapeutic agent dispersed in the responsive gel carrier;
wherein said composition having a starting viscosity and a used viscosity that is higher than the starting viscosity.

112. (New) The dental composition of claim 111 wherein said at least one functional polymer complex comprises carboxypolymethylene and polyvinylpyrrolidone.

113. (New) The dental composition of claim 111 wherein at least one component of the at least one functional polymer complex comprises a polymer capable of altering the viscosity of the dental composition in response to contact with temperature, pH, ionic strength or combinations thereof.

114. (New) The dental composition of claim 111 wherein at least one component of the at least one functional polymer comprises crosslinked homopolymers of acrylic acid, crosslinked

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copolymers of acrylic acid, interpolymers of homopolymers or copolymers of acrylic acid, hydrolyzed or unhydrolyzed PVP/maleic acid anhydride copolymer, polycarboxylates, gellan gum, poly(methyl methacrylate-co-methacrylic acid), hydroxypropyl methylcellulose phthalate, or cellulose acetate phthalate.

115. (New) The dental composition of claim 111 wherein said moisture responsive gel carrier further comprises at least one water soluble salt.

116. (New) The dental composition of claim 111 wherein said at least one therapeutic agent comprises antimicrobial agents, tooth whiteners, anti-inflammatory agents, tooth desensitizers, anticaries agents, tartar control agents, tooth and gum surface protectants, tooth stain prevention agents, agents effective against dental plaque, halitosis, gingivitis, periodontal disease, oral ulcers or combinations thereof.

117. (New) A therapeutic dental composition comprising:

a moisture responsive gel carrier comprises at least one functional polymer complex; and
a whitening agent dispersed in the responsive gel carrier;

wherein said dental composition has a lower viscosity prior to application to the oral cavity and a higher viscosity after application to the oral cavity.

118. (New) The dental composition of claim 117 wherein said at least one functional polymer complex comprises high molecular weight acid functional polymers in combination with vinylpyrrolidone polymers and copolymers.

119. (New) The dental composition of claim 117 wherein said gel carrier further comprises at least one water soluble salt.

120. (New) The dental composition of claim 117 wherein said at least one polymer complex

comprises carboxypolymethylene and polyvinylpyrrolidone and at least one water soluble salt.

121. (New) The dental composition of claim 117 further comprising a stabilizer comprising 1-hydroxyethylidene-1,1-diphosphonic acid, sodium stannate trihydrate, sodium acid pyrophosphate, ethylenediamine tetraacetic acid (EDTA), diethylenetriamine pentaacetic acid (DETPA), nitrilotriacetic acid (NTA), ethylenediamine tetra(methylenephosphonic acid), diethylenetriamine penta(methylenephosphonic acid), sorbitol, xylitol, mannitol, maltitol, lactitol, alkali metal pyrophosphates, alkali metal polyphosphates or mixtures thereof.

122. (New) The dental composition of claim 117 further comprising a pH adjusting agent.

123. (New) The dental composition of claim 117 wherein said whitening agent comprises an alkali metal percarbonate, carbomide peroxide, sodium perborate, potassium persulfate, calcium peroxide, zinc peroxide, chlorine dioxide, sodium chlorite, a hydrogen peroxide complex, hydrogen peroxide or mixtures thereof.

124. (New) The dental composition of claim 117 wherein at least one component of the at least one functional polymer comprises a polymer capable of altering the viscosity of the dental composition in response to contact with moisture, temperature, pH, ionic strength or combinations thereof.

125. (New) The dental composition of claim 117 wherein at least one component of the functional polymer comprises crosslinked homopolymers of acrylic acid, crosslinked copolymers of acrylic acid, interpolymers of homopolymers or copolymers of acrylic acid, hydrolyzed or unhydrolyzed PVP/maleic acid anhydride copolymer, polycarboxylates, gellan gum, poly(methyl methacrylate-co-methacrylic acid), hydroxypropyl methylcellulose phthalate, or cellulose acetate phthalate.

126. (New) A therapeutic dental composition comprising:

a moisture responsive gel carrier comprises at least one functional polymer complex; and
at least one oxidizing agent;

wherein said dental composition is dilution resistant.

127. (New) The dental composition of claim 126 wherein said composition has a lower viscosity prior to application to the oral cavity and a higher viscosity after application to the oral cavity.

128. (New) The dental composition of claim 126 wherein said at least one oxidizing agent is dispersed throughout the carrier.

129. (New) The dental composition of claim 126 wherein said at least one oxidizing agent is dissolved in the responsive gel carrier.

130. (New) The dental composition of claim 126 wherein said at least one oxidizing agent is dispersed homogeneously in the carrier as an insoluble suspended solid particulate.

131. (New) The dental composition of claim 126 wherein said at least one oxidizing agent is emulsified with the responsive gel carrier, creating separate and discrete carrier and oxidizing agent phases within the composition.

132. (New) The dental composition of claim 126 wherein said at least one functional polymer complex comprises carboxypolymethylene and vinylpyrrolidone polymers and copolymers.

133. (New) The dental composition of claim 126 wherein said moisture responsive gel carrier further comprises at least one water soluble salt.

134. (New) The dental composition of claim 126 further comprising a pH adjusting agent.

135. (New) The dental composition of claim 126 wherein said at least one oxidizing agent comprises an alkali metal percarbonate, carbomide peroxide, sodium perborate, potassium persulfate, calcium peroxide, zinc peroxide, chlorine dioxide, sodium chlorite, a hydrogen peroxide complex, hydrogen peroxide or mixtures thereof.

136. (New) The dental composition of claim 131 wherein said oxidizing agent comprises hydrogen peroxide in an amount from about 10.0% to about 36.0% weight to weight of the composition.

137. (New) The dental composition of claim 131 further comprising a stabilizer comprising 1-hydroxyethylidene-1,1-diphosphonic acid, sodium stannate trihydrate, sodium acid pyrophosphate, ethylenediamine tetraacetic acid (EDTA), diethylenetriamine pentaacetic acid (DETPA), nitrilotriacetic acid (NTA), ethylenediamine tetra(methylenephosphonic acid), diethylenetriamine penta(methylenephosphonic acid), sorbitol, xylitol, mannitol, maltitol, lactitol, alkali metal pyrophosphates, alkali metal polyphosphates or mixtures thereof.

138. (New) The dental composition of claim 131 wherein at least one component of the functional polymer comprises crosslinked homopolymers of acrylic acid, crosslinked copolymers of acrylic acid, interpolymers of homopolymers or copolymers of acrylic acid, hydrolyzed or unhydrolyzed PVP/maleic acid anhydride copolymer, polycarboxylates, gellan gum, poly(methyl methacrylate-co-methacrylic acid), hydroxypropyl methylcellulose phthalate, or cellulose acetate phthalate.

139. (New) The dental composition of claim 126 further comprising water in an amount of about 10.0% to about 98.7% by weight of the composition.

140. (New) The dental composition of claim 126, wherein the moisture responsive gel carrier

comprises from about 80.0% to about 99.99% by weight of the composition.

141. (New) A therapeutic dental composition comprising:

a moisture responsive gel carrier comprises at least one functional polymer complex; and
at least one oxidizing agent;

wherein said responsive gel carrier increases the viscosity of the whitening composition when applied to a tooth surface, forming a more viscous gel for increasing the oxidizing agent's contact time with the tooth surface.

142. (New) The dental composition of claim 141 wherein said at least one oxidizing agent migrates out of the viscous gel to provide a whitening effect over a specified time.

143. (New) The dental composition of claim 141 wherein said composition exhibits effective whitening with lower concentrations of said at least one oxidizing agent.

144. (New) The dental composition of claim 141 wherein said composition further comprises about 60.0% to about 99.99% by weight of the composition of water.

145. (New) The dental composition of claim 141 wherein said moisture responsive gel carrier comprises carboxypolymethylene and vinylpyrrolidone polymers and copolymers.

146. (New) The dental composition of claim 141 wherein said moisture responsive gel carrier further comprises at least one water-soluble salt.

147. (New) The dental composition of claim 146 wherein said at least one water soluble salt comprises sodium salt, potassium salt, ammonium salt or combinations thereof.

148. (New) The dental composition of claim 141 wherein said at least one functional polymer

complex comprises from about 0.01% to about 20% by weight of the composition.

149. (New) The dental composition of claim 141 wherein at least one component of the functional polymer complex comprises a polymer capable of altering the viscosity of the dental composition in response to contact with moisture, temperature, pH, ionic strength or combinations thereof.

150. (New) The dental composition of claim 149 wherein said pH responsive polymer comprises carboxypolyethylene, hydrolyzed or unhydrolyzed PVP/maleic acid anhydride copolymer, polycarboxylates, gellan gum, poly(methyl methacrylate-co-methacrylic acid, hydroxypropyl methylcellulose phthalate, and cellulose acetate phthalate.

151. (New) The dental composition of claim 141 wherein said at least one oxidizing agent comprises about 0.01% to about 20.0% by weight of the composition of hydrogen peroxide.

152. (New) The dental composition of claim 141 wherein said oxidizing agent comprises about 2.0% to about 30.0% by weight of the composition of carbamide peroxide.

153. (New) The dental composition of claim 141 further comprising water in an amount of about 10.0% to about 98.7% by weight of the composition.

154. (New) The dental composition of claim 141, wherein the moisture responsive gel carrier comprises from about 80.0% to about 99.99% by weight of the composition.

155. (New) The dental composition of claim 141 wherein said at least one oxidizing agent comprises hydrogen peroxide in an amount from about 10.0% to about 36.0% weight to weight of the first tooth whitening composition.

156. (New) The dental composition of claim 141 wherein said contact time ranges from about five minutes to about one hour.

157. (New) A liquid oral therapeutic dental composition comprising:

a moisture responsive gel carrier comprising at least one functional polymer complex and at least one water soluble salt; and
a therapeutic agent;

wherein said composition builds viscosity upon contact with a more humid environment.

158. (New) The dental composition of claim 157 wherein said composition has a starting viscosity and a used viscosity that is higher than the starting viscosity.

159. (New) The dental composition of claim 157 wherein said at least one functional polymer comprises carboxypolymethylene and vinylpyrrolidone polymers and copolymers.

160. (New) The dental composition of claim 157 wherein said moisture responsive gel carrier further comprises at least one water-soluble salt.

161. (New) The dental composition of claim 160 wherein said at least one water soluble salt comprises sodium salt, potassium salt, ammonium salt or combinations thereof.

162. (New) The dental composition of claim 157 wherein said at least one functional polymer complex comprises from about 0.01% to about 20% by weight of the composition.

163. (New) The dental composition of claim 157 wherein at least one component of the at least one functional polymer comprises a polymer capable of altering the viscosity of the dental composition in response to contact with moisture, temperature, pH, ionic strength or combinations thereof.

164. (New) The dental composition of claim 157 wherein said composition further comprises about 60.0% to about 99.99% by weight of the composition of water.

165. (New) The dental composition of claim 157 wherein said at least one therapeutic agent comprises antimicrobial agents, tooth whiteners, anti-inflammatory agents, tooth desensitizers, anticaries agents, tartar control agents, tooth and gum surface protectants, tooth stain prevention agents, agents effective against dental plaque, halitosis, gingivitis, periodontal disease, oral ulcers or combinations thereof.

166. (New) The dental composition of claim 157 wherein the moisture responsive gel carrier comprises from about 80.0% to about 99.99% by weight of the composition.

167. (New) The dental composition of claim 157 wherein said composition is designed to remain in contact with the oral cavity for a predetermined period of time ranges from about five minutes to about one hour.

168. (New) The dental composition of claim 157 wherein at least one component of the at least one functional polymer complex comprises a polymer capable of altering the viscosity of the dental composition in response to contact with moisture, temperature, pH, ionic strength or combinations thereof.

169. (New) The dental composition of claim 168 wherein said pH responsive polymer comprises carboxypolymethylene, hydrolyzed or unhydrolyzed PVP/maleic acid anhydride copolymer, polycarboxylates, gellan gum, poly(methyl methacrylate-co-methacrylic acid, hydroxypropyl methylcellulose phthalate, and cellulose acetate phthalate.

170. (New) A two component dental therapeutic composition, comprising:

a first component comprising from about 10.0% to about 36.0% of at least one oxidizing agent by weight of the first component, and from about 64.0% to about 90.0% by weight of a carrier of the first component; and

a second component comprising from about 1.0% to about 10.0% by weight of at least one oxidizing agent of the second component, and from about 90.0% to about 99.0% by weight of a moisture responsive gel carrier of the second component;
wherein said second component increases in viscosity upon contact with moisture following application to an oral cavity surface.

171. (New) The two component dental composition of claim 170 wherein said moisture responsive gel carrier comprises from about 80.0% to about 99.99% by weight of the second component.

172. (New) The two component dental composition of claim 170 wherein said moisture responsive gel carrier comprises a functional polymer complex comprising carboxypolymethylene and vinylpyrrolidone polymers and copolymers.

173. (New) The two component dental composition of claim 170 wherein said moisture responsive gel carrier further comprises at least one water-soluble salt.

174. (New) The two component dental composition claim 173 wherein said at least one water soluble salt comprises sodium salt, potassium salt, ammonium salt or combinations thereof.

175. (New) The two component dental composition of claim 172 wherein said functional polymer complex comprises from about 0.01% to about 20% by weight of the second component.